

| Flow chart of BMW and Wittenstein use case | | | | | | |
|--|---|--|--|--|--|--|
| Capability Check | | Availability check and primitives execution | | | | |
| DT Agent | | | | | | |
| Wiring Agent | | | | | | |
| Transport Agent MiR600 | | | | | | |
| Storage Agent | | | | | | |
| Coordinator Agent | <p>Start</p> <p>Get sequenced primitives with task planning</p> <p>Allocate relevant agents</p> <p>Use case</p> <p>Check capability</p> <p>BMW</p> <p>Wittenstein</p> <p>Check capability</p> | <p>Check availability</p> <p>Store process status</p> <p>Store process status</p> <p>Store process status</p> <p>Store process status</p> <p>Store process status</p> <p>Inform customer about production end</p> <p>End</p> | | | | |
| Storage Agent | <p>Capable?</p> <p>Yes</p> <p>No</p> | <p>Request, collect and put gearbox parts on MiR250 robot</p> <p>Update Digital Twin</p> <p>Inform primitive done</p> <p>Next agent in sequence list</p> <p>Check availability</p> <p>Deliver work pieces to gearbox assembly station</p> <p>Update Digital Twin</p> <p>Inform primitive done</p> <p>Next agent in sequence list</p> <p>Check availability</p> <p>Deliver assembled gearbox work pieces to Supermarket cell</p> <p>Update Digital Twin</p> <p>Inform primitive done</p> <p>Last agent in sequence list</p> <p>Store products in supermarket cell</p> | | | | |
| Transport Agent MiR250 | <p>Capable?</p> <p>Yes</p> <p>No</p> | <p>Check availability</p> <p>Deliver assembled wiring workpieces to supermarket cell</p> <p>Check availability</p> <p>Inform primitive done</p> <p>Next agent in sequence list</p> <p>Update Digital Twin</p> <p>Assemble wiring parts</p> <p>Check availability</p> <p>Update Digital Twin</p> <p>Process and synchronize data</p> | | | | |
| Assembly Agent | <p>Capable?</p> <p>Yes</p> <p>No</p> | <p>Process and synchronize data</p> <p>Process and synchronize data</p> <p>Process and synchronize data</p> <p>Process and synchronize data</p> | | | | |
| DT Agent | | | | | | |

